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ABSTRACT

In discussing quality indicators of teacher education programs, three components of teacher education are addressed: the program's content, the faculty, and products of inquiry. Three different rationales are presented for selecting and ordering content for teacher education curricula. These rationales, phrased as "decision-rules" are: in order to be considered viable content for a teacher preparation program, the concept, principle, or process must be: (1) related to student growth as revealed by empirical evidence; or (2) identified as a necessary curricular component by expert opinion based on experience; or (3) logically explained by a theory from social science and/or philosophy. Examples of content-maps resulting from the execution of each of these rules are presented to illustrate the nature of content resulting from each decision-rule. A discussion is presented on quality indicators of teacher education professors, citing the influence of prior teaching experience and the nature of doctoral preparation as important influences on the professor's subsequent performance in teaching, research, and service. A brief discussion is presented on a recent study undertaken to investigate inquiry productivity in teacher education among colleges and universities in the United States. The assessment of productivity was based on contributions to annual meetings of teacher associations and to leading journals of teacher education. References are included. (JD)

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Factors Influencing Quality in Teacher Education: Program, Faculty and Productivity

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Paper prepared for the Texas Association of Colleges for Teacher Education.

April 6, 1987

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The myrid of national reports following the initial report by the National Commission on Excellence in Education, A Nation at Risk (NCEE, 1983) recommended significant changes in elementary and secondary education and led to subsequent reports on higher education. Due to these latter reports, the quality of teacher preparation programs has become a social concern. Often decision makers in government respond to social concerns depending on their perceived immediacy and severity by allocating funds in hopes of reducing or limiting the concern affecting society. Yet the concerns of public education including the preparation of teachers have precipitated regulations and symbolic measures (e.g., basic competency tests) to counter the public's distress regarding teacher education. In contrast, a few officials have called for additional funding for teacher preparation programs to enhance their quality and potential impact on education.

This paper proposes quality indicators of teacher preparation programs as an initial step in highlighting teacher education programs. Three components of teacher education will be addressed: programs, professoriate and products of inquiry. Perhaps this effort will establish a dialogue among decision-makers who ultimately will shift their positions from regulations to increased funding for this timely and critical social issue.

Quality Indicators of Program

Teacher education takes place in nearly 1,400 institutions of higher education in the United States. Yet with few exceptions the nature of the content and corresponding coursework of teacher education have changed little in the past half century (Drummond & Andrews, 1980). Secondary teaching candidates traditionally complete courses such as, introduction to education, general and adolescent psychology, general methods of teaching, and a subject-specific

methods course. Their counterparts in elementary education experience child psychology rather than adolescent psychology and numerous method courses for subjects commonly taught in elementary school rather than a general methods course. As the culminating experience teaching candidates across elementary and secondary education complete a field experience, usually student teaching. This stability is incongruent with the expanding knowledge base associated with teaching and additional responsibilities placed on teachers especially during the past two decades.

Kerr (1983) has posited the stability of these curricula is due to constraints on teacher education, especially the undergraduate context and the well-documented underfunding of the professional education of teachers. For the sake of brevity only the undergraduate context will be addressed. Augmenting the professional component of teaching candidates' undergraduate studies by reducing coursework for academic foundations and content specialization have been summarily dismissed because such adjustments would diminish the liberal education of future teachers and certainly not enhance the status of teacher education (Campbell, 1975). Other options for expanding professional curricula include: lengthening the time required to complete a baccalaureate degree and extending professional study to the graduate level. While additional time may be essential in providing for a higher quality teacher preparation program, serious consideration of other curricular variables and decision-rules influencing the scope and sequence of curriculum should be examined. Issues associated with the curricular scope and sequence of teacher education content based on empirical evidence, experience, and theory are presented to illustrate this consideration.

Empirical Evidence: Soltis (1984) notes that educational researchers have imitated methods and form of the natural sciences while seeking knowledge,

legitimacy and status. This phenomena has resulted in language and logic of the positivist tradition being imbued in educational theory and practice. Fortunately some latitude has been accepted in this orientation of late allowing qualitative or ethnographic research techniques, e.g., naturalistic descriptions and survey efforts to be included with classical control-treatment group experiments in yielding creditable findings to the literature (Shulman, 1986). Process-Product research in teacher education, which incorporates techniques from both qualitative and quantitative research perspectives, is being reviewed by teacher education policy makers seeking defensible, that is, empirically supported, concepts, principles and skills for their curricula. Fry, Smith and Wilson (1984) indicate that a research-validated knowledge base on effective teaching is the basis for the Florida Beginning Teacher Program and the Florida Performance Measurement System. Other writers, Evertson, Hawley, & Zlotnik, 1984; Guyton, 1984; Haberman, 1984; and Koehler, 1983, have suggested that sufficient research evidence is available to guide educational practice in a number of skills.

One organizational scheme for presenting these empirically based topics in a teacher preparation curriculum is represented by table 1. The basis for sequencing exhibited in this content map could be readily linked with the order of occurrence of topics in the process of teaching.

Place Table 1 about here.

Experience: the precedent for using experience as the basis for selecting content for pedagogy is well documented. Early normal schools relied extensively on the knowledge and judgement of teachers who shared their craft with teaching apprentices under their tutelage. However, Haberman (1984) notes

that the ultimate criterion for evaluating experiential knowledge depends on the competence, judgement and wisdom of the individual whose "experience" is being fashioned into a curriculum. When experience is accepted as valuable, it is an acceptance of the individual's expertise. Therefore, a curriculum for teacher preparation based on experience in this sense is also one based on expert opinion. Techniques for developing such a curriculum include reviewing existing teacher education program curricula and recording common elements across programs. Those content elements occurring with highest frequency could then be analyzed to determine possible reasons for their inclusion. It is hypothesized that nearly all curricular components identified in this manner would be linked to the curriculum developers' experiences whether vicarious or direct.

A second approach for developing an experience based content structure would be to conduct a Delphi study with expert teacher educators. The final content elements resulting from this process would have survived multiple inclusion/exclusion decisions by the same experts. Table 2 presents an example of a content map developed by this approach. The basis used for sequencing these topics from left-to-right in table 2 is linked to the frequency of application of related skills by teaching candidates.

Place Table 2 about here.

Theory: concepts from psychology, sociology, anthropology and philosophy represent other sources of content for pedagogy. For example, principles derived from learning theory have influenced: strategies for encoding and retrieving information, techniques of reinforcement for cognitive learning and social control, role models for associating attitudes to ideas, and approaches for motivating and maintaining interest. These instances represent but a

fraction of learning theory applications in a structured instructional setting. Similarly, principles from human development have substantially influenced the scope and sequence of early childhood and elementary education curricula.

Theories and principles from sociology and organizational science, which explain how individuals behave in groups and particular social settings, certainly are worthy content for teaching candidates. Sociological principles related to the role of the teacher, how teachers are influenced by their peer groups in the workplace, the influence of administrative styles on teachers, and the impact of the community on the professional life of the teacher reflect the range of professional issues addressed by this discipline. Further, social institutions such as schools have qualities which affect people who are employed by the institution. To understand the behavior of individual teachers, often the optimal approach is to examine the qualities of a school rather than the individual teachers who work there.

Anthropology has provided a rationale as well as techniques for examining how human groups form social organizations. Of particular concern to anthropologists are ways social organizations and culture influence the actions and choices of individuals. For instance, suppose a teacher requests class members to form a line for lunch call. Cultural understandings about proper rights and obligations of the teacher and each learner are accepted for that social setting, if the teacher's request is to be obeyed. Clearly, the official rights of the teacher differ from the rights of the learners. Officially, all learners in the line have an obligation to obey the teacher's command to stand in line; unofficially, though some learners may have rights to obey more casually than others. These differences among the learners represent the influence of an unofficial, informal social system in which status and role are defined differently from the ways they are defined in the official, formal

system. These meanings-in-action phenomena contribute substantially to the teacher's knowledge and usually are gained through experience and intuition (Erickson, 1986). Certainly perspectives from anthropology would alert teaching candidates to the many social dimensions of schools.

In any teaching encounter, there are philosophical principles and values evident in the choice of subject matter, as well as in the selection and implementation of instructional strategies. The results of teaching can be evaluated not only in terms of quantity of what is learned but the quality of the learnings as well. Soltis (1984) urges that relevant standards and norms for the qualitative and ethical dimensions of teaching be determined. Currently, this normative dimension of teaching gets little systematic and thoughtful attention yet it continues to influence education just the same. Developing a content structure for teaching based on theory would certainly incorporate these dimensions. Table 3 represents a taxonomy whose components have been identified from extant theory which affects teaching. Topics have been clustered by discipline; however, no basis for sequencing the order of topical presentation is suggested.

Place Table 3 about here.

The preceding material presents three different rationales for selecting and ordering content for teacher preparation curricula. These rationales phrased as decision-rules are: in order to be considered as viable content for a teacher preparation program, the concept, principle or process: (1) must be related to student growth as revealed by empirical evidence; or (2) must be identified as a necessary curricular component by expert opinion based on experience; or (3) must be logically explained by a theory from social science

and/or philosophy. Examples of content-maps resulting from the execution of each of these rules have been presented to illustrate the nature of content resulting from each decision-rule. Certainly these content maps are not exhaustive in their treatment of topics nor are the maps mutually exclusive: witness the occurrence of the topics classroom management, communication, leadership and diagnosis across the maps. This content overlap is logical given the interaction of theory and empirical evidence from the philosophical reasoning of Locke, where evidence precedes theory, or Kant, who posited that data and underlying theory provide the basis for sound propositions (Mitroff and Turoff, 1975). Further, expert opinions of teacher educators are influenced by their experience with research literature, their research programs, and their study of the professional literature of the social sciences and philosophy. Thus, it is reasonable to assume content maps based on experience would repeat theoretical and empirical elements but be presented in terms of classroom phenomena.

Perhaps a consolidation of the three maps represents the most desired content structure for pedagogy. By fusing the maps, the validation of teacher education curricula perhaps would depend upon the content being included by two or all three of the decision rules. Efforts of this nature ultimately will result in a defensible logic for the scope and sequence of curricular elements in teacher education and represent a quality indicator of teacher preparation programs. Further, curriculum principles would be used to justify increasing resources be they time, money or both.

Quality Indicators of Professors

Questions about the quality of teacher education cannot be answered without examining those who prepare teachers. Richard Wisniewski (1986) cites the

influence of prior teaching experience, and the nature of doctoral preparation for the professoriate as important influences on the professor's subsequent performance in teaching, research and service. These influences have been used to structure this discussion.

Teaching Experience: teacher educators typically have taught in the public schools for an average of five years before they completed their doctorates and joined a teacher education faculty. This experience serves them well regarding curricular decisions from an experiential perspective, but they often undervalue other sources of pedagogical content. Further, individuals with extensive public classroom teaching experience may find the transition to the intellectual norms of higher education difficult since they may not accept the academic axiom that being a student in one's field is more important than merely meeting classes (Wisnieski, 1986). Nancie Gonzalez (1987) elaborates on this notion stating that professors should do more than merely "teach". It is expected in academia that professors present one's own data, synthesis, and interpretation. They should exercise intellectual leadership through continuous and independent search for new knowledge and teach others both what they have learned and how to conduct research.

Emphasis on scholarship in higher education has occurred to some extent due to the difficulty in judging excellent teaching. In assessing teaching, students tend to be influenced by personal appearance and style, while fellow teachers give high marks to colleagues who try hard, even though their students may not succeed. Ironically, demanding teachers who set high standards and require students to master the content are also respected by their colleagues as are popular teachers (Sykes, 1984). Collectively, these qualities (appearance, style, effort, rigor, popularity) do not form a convincing set of characteristics to determine whether quality teaching is taking place.

Why are rigor and academic excellence not the most important criteria by which teachers judge quality of teaching? No single explanation is evident, but individuals drawn to teaching and subsequently to teacher education are generally very kind-hearted people. These individuals are sincere conscientious, motivated, and do engage in scholarly activities. They believe that teaching does make a difference and are concerned about standards for the profession, BUT will usually decide against a standard when faced with a human crisis (e.g., student is close to passing but not quite there, the compassionate side takes over and an exception to the rule is made). Herein lies the paradox of teaching experience. Successful teaching experience in public schools is a logical prerequisite for becoming a teacher educator. Yet admirable human qualities such as, compassion and nurturing which contribute to an individual's success in a public school classroom may conflict with academic standards expected of a teacher educator. For the sake of program quality, it seems that teacher educators when faced with dilemmas of enforcing academic and program standards should carefully consider both the intellectual and human consequences of waiving program requirements and not let emotions and past experience overwhelm the logic of their deliberations.

Doctoral Program: Preparation for a professorial position in teacher education almost always takes place in another college of education. If the program exists in an environment which promotes exchange of ideas and collegial research activity by faculty and graduate students the doctoral experience will foster scholarship and ease the transition to the intellectual norms of higher education. With encouragement and guidance, doctoral candidates exhibiting keen scholarship will become faculty members who question and challenge conventional wisdom and traditional practices and serve as catalysts for improving teacher education (Wisnieski, 1986).

Unfortunately, graduate experience in colleges of education rarely complement or encourage the aforementioned environment. To illustrate this grim assessment, a presentation on the nature of doctoral programs across 13 major research universities in the United States included the following observations. Over 50 percent of the alumni who responded to a survey indicated they did not engage in a research activity except their dissertation research during their doctoral study. Further, 70 percent of the respondents had not presented a research paper, nor co-authored or authored a single research publication during their doctoral study. According to responses to the survey, a majority of educational faculty in these institutions devoted a minority of their time to research and would prefer to be judged on their contributions to teaching and service (Brown, 1984). Thus, it appears that the value of research is not always highly valued by those who teach and chair doctoral programs in education, even in institutions with established research reputations.

Moore (1987) has investigated indicators of faculty quality (especially, faculty candidates) based on the perceptions of education deans. While publications in referred journals and the institution granting the terminal degree were among highly regarded quality indicators, personal characteristics, such as, the candidate's emotional stability, energy and motivational levels, and compatibility with other faculty were also considered to be important quality indicators by deans. These criteria suggest academic preparation and scholarly activity of prospective faculty are linked with personal and organizational concerns when decision makers select faculty members.

Assessing the personal qualities of candidates as well as their academic background and scholarly products when selecting faculty members is a logical and reasonable approach, especially in light of the critical view of graduate curricula in colleges of education. A careful assessment of the candidate's

candidate's scholarship potential is essential if the individual is to be a contributing member of the community of scholars.

Quality Indicators of Teacher Education: Inquiry Products

Recently a study was undertaken to investigate inquiry productivity in teacher education among colleges and universities in the United States. For this study, productivity was based on contributions to annual meetings of the Association of Teacher Educators (ATE), the American Association of Colleges of Teacher Education (AACTE), the American Educational Research Association - Special Interest Group on Teacher Education (AERA) and leading journals in teacher education over a five year period: 1980-1984. Data were analyzed in terms of total productivity yielding a list of 50 institutions which have been active in knowledge production and program development in teacher education. Particulars of this effort are reported elsewhere (Denton, Tsai,& Cloud, 1986), however the following ancillary findings not reported previously may be of interest. For example:

- A majority of the 2727 presentations and publications recorded in this effort were descriptive accounts of teacher education programs, components of those programs, or position papers on an issue of interest to teacher educators.
- Both qualitative and quantitative techniques were evident in the descriptive accounts, yet collecting and interpreting perceptional data (surveys) were relied on most often to provide the basis for the descriptions.
- The number of faculty members responsible for the presentations or publications occurring from the first ten institutions on the productivity list ranged from 13 to 46 with an average of 23 faculty

contributing to the institution's frequency of journal and conference listings.

. Single individuals across the first ten institutions on the productivity list were responsible for 5 to 41 percent of the institution's listings.

It is an encouraging finding that ethnographic as well as quantitative techniques are being applied in inquiry efforts in teacher education. While some writers insist the basic tenets of these approaches to inquiry are so different they cannot be combined, that is, viewing phenomena from the perspective of the whole in contrast to examining specific components of the phenomena to explain their relation and causal influence, others contend an integration of these approaches can be accomplished through collaborative research efforts of individuals with these research orientations. Proponents of this latter view hold that findings from one approach can be used to verify and explain observations collected from a different perspective. An excellent account of how these techniques may be linked and applied in a research program involving classroom teaching experiences is given by Evertson and Green (1986).

A second observation regarding these ancillary findings is that examining the perceptions of individuals directly involved in teacher preparation as a former student, teaching candidate, faculty member, administrator through the application of survey instruments have provided valuable information to program developers. Relying on perceptional data for informed decision-making especially has been of value when related literature was sparse or non-existent. Yet with an expanding knowledge base in teacher education, perhaps the time is right to shift attention to state and regional data bases on classroom performance of teachers and the corresponding cognitive measures of their learners. The emphasis on accountability in our nation public schools evidenced by required classroom observations of teachers using state adopted observation

scales and subsequent testing of learners to determine whether they have mastered state mandated curricular objectives have provided volumes of accountability data on teaching and learning. These data offer vast and significant opportunities for examining the teaching and learning processes, but the multitude of tasks associated with coordinating, analyzing and interpreting these data sets are so great that consortia of state department of education, public schools, and colleges of education must be developed to conduct this inquiry.

On a much smaller scale, longitudinal studies of alternative curricula for preparing teachers within an institution are needed. Determining the effect of different content and approaches to sequencing the content have not been examined extensively by teacher educators. Additionally, excellent suggestions for inquiry efforts on teacher education are offered by Gideonse (1983). In order to accomplish inquiry efforts of this type, a research program involving the majority, if not all, of the teacher education faculty is necessary. Collaborative efforts among teacher educators would do much to offset the observation that most of the products of inquiry in teacher education are due to the efforts of a few individuals at each institution. A first rate college of education deserves this status only when the faculty collectively is engaged in inquiry activity and should not merit special recognition when single members of the faculty are responsible for much of the institution's productivity rating.

Conclusion

The challenge of discussing quality indicators of teacher education programs resulted in endless deliberations and examining ideas others have expressed on the nature of teacher education. What I initially conceived of as a list of indicators with some embellishment gave way to issues of curriculum

decision, faculty, and inquiry products of teacher education. At least from my perspective, curriculum development and implementation are perhaps the most technically complex processes teacher educators engage in as professors. It appears to me too much emphasis has been placed on the variable of time as it influences curriculum and woefully little attention to other curriculum variables such as the characteristics of different curriculum designs, the epistemology of the extant content (which yields the bases for selecting content and the principles for codifying the content into maps), bases for sequencing curricular elements, and ultimately how the curriculum is to be evaluated. These variables and issues influence the amount of time required to implement a sound curriculum, and if seriously considered provide ample justification for altering current curricula.

Second, regardless of the soundness of the curriculum, successful implementation rests with the faculty. Prior experience, academic preparation, and personal qualities of individuals all affect their effectiveness as faculty members. While teaching experience in elementary or secondary schools should be prerequisite to membership on a teacher education faculty, qualities which served the individual well as a classroom teacher may cause dissonance to the individual in the role of faculty member in higher education. Further, in assessing the qualifications of prospective faculty members, a careful analysis of the individual's propensity for scholarship must be addressed. Perhaps an individual who comfortably fits in with present faculty will help teacher education to grow and prosper, but chances of this person constantly searching and challenging conventional wisdom and established practices are slim. Conversely, if a brash new comer exhibiting such behaviors were to join a faculty, perhaps changes in the program would occur, including his or her early release from a faculty position. Clearly, much care and thought go into the

selection of faculty members. It is especially important though to assess the individual's potential for continued scholarship, since the complexities of conducting quality inquiry in teacher education are substantial.

Assuming additional individuals with quality academic credentials are recruited into teacher education, will the nature of inquiry change? Maybe! However, in order for significant improvement in the quality of inquiry in teacher education to occur, greater involvement by more faculty members will be essential. If the new faculty member enjoys inquiry and conceives of inquiry as a team effort this individual and the fortunate teacher education program may make significant contributions.

References

Brown, L. (1984). Nature of graduate education in leading universities in the United States. Paper presented at retreat of College of Education, Texas A&M University, College Station, Texas.

Campbell, J. K. (1975). Up from pedagogy. Intellect, 104, 40-44.

Denton, J. J., Tsai, C. Y., Cloud, C. (1986). Productivity of faculty in higher education institutions, Journal of Teacher Education, 37, 12-16.

Drummond, W. H. & Andrews, T. E. (1980). The influence of federal and state governments on teacher education. Phi Delta Kappan, 62, 97-100.

Erickson, F. (1986). Qualitative methods in research in teaching. In M. C. Wittrock (Ed.) Handbook of Research on Teaching (3rd ed.) New York: Macmillan Publishing Co.

Evertson, C. & Green, J. (1986). Observation as inquiry and method. In M. C. Wittrock (Ed.) Handbook of Research on Teaching, (3rd ed.) New York: Macmillan Publishing Company.

Evertson, C., Hawley, W. J., Zlotnik, M. (1984). The characteristics of effective teacher preparation programs: A review of research. Paper prepared for the Educational Analysis Center, Office of Planning, Budget, and Evaluation. United States Department of Education.

Fry, B., Smith, D. C., Wilson, G. W. (1984). Policies, practices, and research in teacher education. Beyond the Looking Glass National Conference hosted by the R&D Center for Teacher Education, University of Texas, Austin and Southwest Educational Development Laboratory.

Gideonse, H. D. (1983). In search of more effective service: Inquiry as a guiding image for educational reform in America. S. Rosenthal & Co.

Gonzalez, N. L. (1987). The professor as researcher. National Forum, 67, 7-10.

Guyton, E. (1984). Curriculum reform: The crisis in teacher education. Action in Teacher Education, 6:3, 7-15.

Haberman, M. (1984). An evaluation of the rationale for required teacher education: Beginning teachers with and without teacher preparation. Paper prepared for the National Commission on Excellence in Teacher Education. 98 pages.

Kerr, D. H. (1983). Teaching competence and teacher education in the United States. In L. S. Shulman & G. Sykes (Eds.) Handbook of Teaching and Policy. New York: Longman.

Koehler, V. (1983). Introduction: A research base for the content of teacher education. In D. C. Smith (Ed.) Essential Knowledge for Beginning Educators. Washington D. C.: American Association of Colleges for Teacher Education.

Mitroff, I. I. & Turoff, M. (1975). Philosophical and methodological foundations of Delphi. In H. A. Linstone and M. Turoff (Eds.) The Delphi Method: Techniques and Application. Reading, MA: Addison-Wesley.

Moore, A. J. (1987). Selecting outstanding faculty: Indicators of quality. Journal of Teacher Education, 38, 43-47.

NCEE (1983). A Nation at Risk: The Imperative for Educational Reform. National Commission on Excellence in Education, United States Department of Education, Washington, D. C.

Shulman, L. S. (1986). Paradigms in the study of teaching: A contemporary perspective. In M. C. Wittrock (Ed.) Handbook of Research on Teaching, (3rd ed.) New York: Macmillan Publishing Company.

Soltis, J. F. (1984). On the nature of educational research. Educational Researcher, 13:10, 5-10.

Sykes, G. (1984). The deal. The Wilson Quarterly, 59-77.

Wisniewski, R. (1986). The ideal professor of education. Phi Delta Kappan, 68, 288-292.

Table 1

Example of Content Elements Selected for Content Structure
of Pedagogy Based on Empirical Evidence

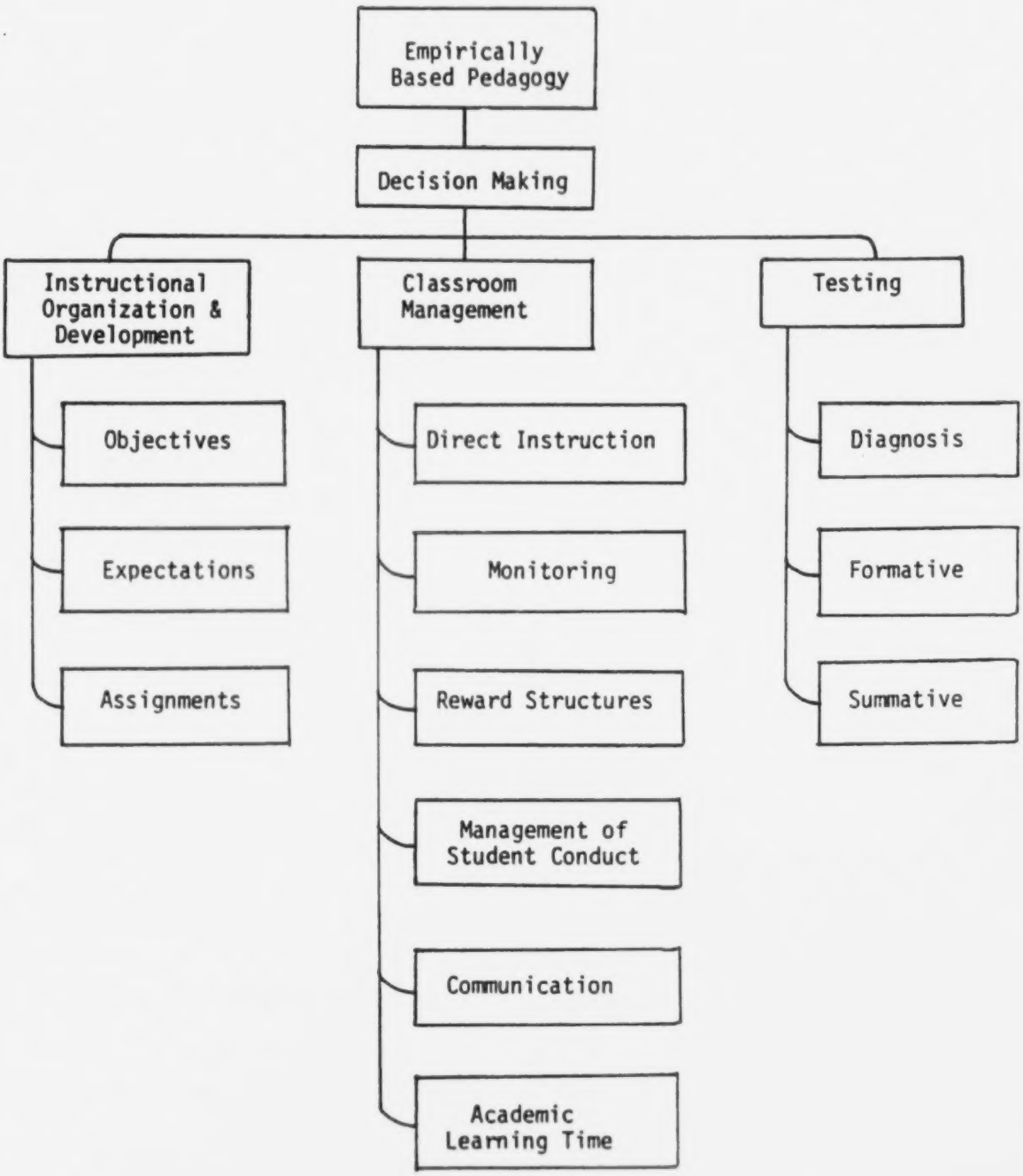

Table 2

Example of Content Elements Selected for Content Structure of Pedagogy Based on Experience

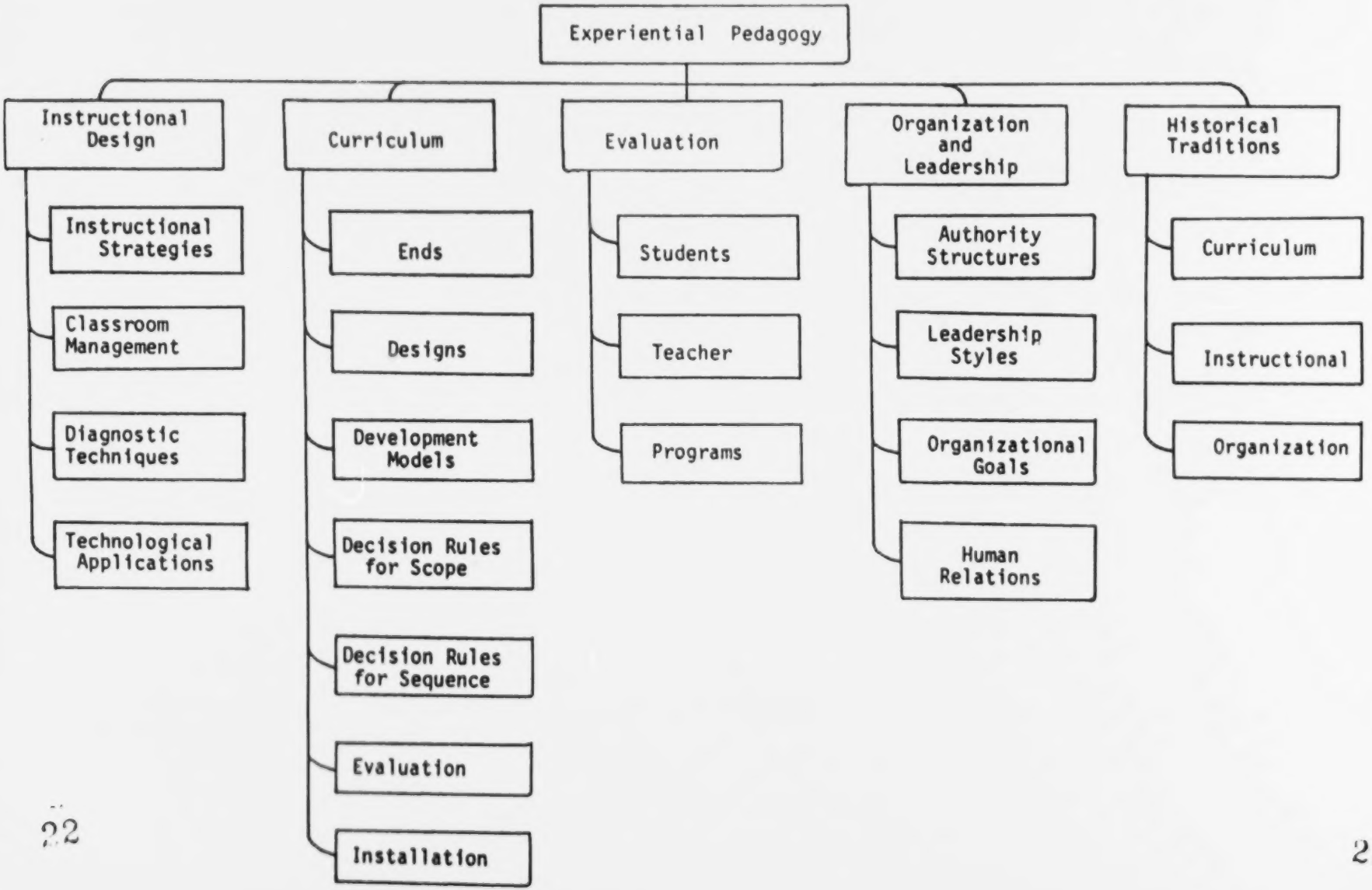

Table 3

Example of Content Elements Selected for Content Structure of Pedagogy Based on Theory